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SARATOV PLANT BUILDS DRY-SPARK GRINDERS;
EXPLAINS SPARK PROCESS TO CHILDREN

SUGGESTS NEW METHOD -- Znaniye-Sila, No 1, Jan 50

Anode-mechanical grinding requires special apparatus and is difficult to apply in some enterprises. Engineer Perlin, of the Plant imeni Ordzhonikidze, recently suggested an entirely new method of grinding cutters having hard-alloy blades -- the electrocontact method.

Perlin's method is very simple and can be used by any enterprise. A cast-iron or steel disk rotating at a rate of 3,000 rpm is connected to one of the source poles of an electric current. The second pole is connected to the cutter being ground. During grinding, the cutter presses against the disk, closing the circuit. Since the current meets a high resistance at the point of contact between cutter and disk, heat is given off. This heat fuses the surface of the tool but does not melt the disk, since its contacting surface is moving continuously. The rapidly revolving disk instantly disperses the melted molecules of metal, thus accomplishing the grinding of the hard-alloy tool.

The results obtained in grinding by the electrocontact method are good, and the cutting edge is cleaner than when ground with an ordinary abrasive wheel.

Since there is no abrasive dust formed in the process, there is less need for special shop ventilators.

The design of the electrogrinding machine tool is simple. Cast-iron and steel disks are attached to each end of an electric motor shaft. The cast-iron disk is intended for rough grinding, the steel for finishing the cutting edges. The cutting tool is clamped in a special arbor. The current, coming from the power source, flows through a transformer which lowers its voltage.

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Perlin's machine tool can be built in any workshop. This permits even wider use of hard-alloy tools, and together with them, high-speed methods of metalworking. In 1949 the Saratov Machine-Tool Plant was already producing such machine tools.

EXPLAINS SPARK METALWORKING TO CHILDREN -- Pionerskaya Pravda, No 103, 27 Dec 49

Probably many of you have noticed during physics experiments that a blue spark jumps between the contacts of a switch when a circuit is closed. This spark is a type of electrical discharge. This discharge breaks down the contact and eventually puts it out of order.

How can this little spark, which erodes electrical equipment and causes millions of rubles damage, be rendered harmless?

Boris Romanovich and Natal'ya Iosafovna Lazarenko worked on this problem. Finally they found a means of greatly cutting down the damage done by the spark. But they also found that the spark could be an irreplaceable servant to mankind.

If one replaces one of the contacts of a switch with a metal part in which, let us say, a hole must be made, and a spark is made to jump several thousand or more times per second, the spark will hollow out not a shallow depression but a deep hole.

At the point of contact between the spark and the metal, a temperature of several hundred thousand degrees builds up which gives rise to a microscopic explosion of metal, which is, of course, invisible to the naked eye. A pit is formed on the metal, this pit getting deeper and deeper until a through-hole appears. Strangely enough, the piece of metal being worked stays cool. It hasn't time to get hot.

Lazarenko's invention is already in use in Soviet industry. At plants once can watch a worker drill out complex holes in the hardest steel, which no cutting tool could mark, or sawing off rails in half a minute with only a brass plate for an electrode. By means of the spark method, super-hard alloy tips are brazed on cutting tools, metal is ground, and jobs which could be done by no other method are accomplished.

BUILDS OWN SPARK UNITS -- Leningradskaya Pravda, No 272, 19 Nov 49

A number of shops at the Leningrad Krasnyy Vyborzhets Plant are in need of a thoroughgoing technical reorganization. Such shops include the molding, metal-rolling, and pipe-drawing shops. Mechanization in these shops is at a low level, as are other technical facilities. The introduction of modern techniques has unfortunately been almost entirely limited to what the plant can build for itself in the way of new apparatus. Anode-mechanical machine tools for sharpening cutting tools, machine tools for making punches and dies, and metal-cutting tools and units for spark hardening have all had to be made by the plant itself. It is high time that the manufacture of such apparatus be assigned to a specialized enterprise which could series-produce the items.

Despite the disadvantage under which the plant has been operating with respect to getting modern equipment, spark hardening of cutting tools by units built in the plant's repair shop is widely practiced. Units for spark broaching and cutting of hard-alloy parts have also been built and are in use in the plant. Two units for anode-mechanical sharpening of cutting tools have been completed. Scientific research institutes have assisted in all these projects.

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Among the new products which the Krasnyy Vyborzhets plant is now turning out are heavy hydraulic presses for making large-diameter pipe, heavy milling machines, and six-roller rolling mills.

Finding and utilizing nonferrous-metal and alloy substitute materials is receiving much attention. In a number of items made by the plant, stainless bronze bearings are replaced with zinc-alloy bearings. Experiments aimed at eliminating the need for two other short-supply materials are now underway.

The Krasnyy Vyborzhets Plant is in favor of considerably expanding the framework of industrial cooperation among plants in Leningrad. There is always some way in which a plant can meet this or that order through a cooperative agreement without harm to its basic commitments. Krasnyy Vyborzhets has worked out agreements with the Machine-Tool Building Plant imeni Sverdlov, the Hoist and Transport Equipment Plant imeni Kirov, the Lenstankolit Plant, and others. These agreements should be further developed.

APPLIES ELECTRIC POLISHING -- Zarya Vostoka, No 227, 19 Nov 49

Electric polishing, already widely in use among the nation's leading enterprises, is now being applied at the Tbilisi Textile Machine-Building Plant imeni 26 Commissars. The process is not only greatly speeding up production at the plant, but is sharply cutting manufacturing costs.

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